Field Notes on ONIONS

By
Lester L. Morse

Published by
C. C. Morse & Co.
Seed Growers
San Francisco, California, U. S. A.
December, 1923
First Edition

Field Notes on ONIONS

CORNELL UNIVERSITY
Frank A. Lee
LIBRARY
NYSAES, GENEVA

GNVA
SB
341
M88
1923

Field Notes on Onions



The Seed Trade has been so appreciative of my bulletins on Sweet Peas, Lettuce and Carrots, that I think my friends might be interested in my notes on onions and in the hope that these might be useful to them I have put into print such notes as I have been making for many years.

All of my bulletins are styled "Field Notes" for they represent observations taken in the field and not from any special study from books.

If this brief treatise on onions proves of any assistance whatever to the Seed Grower or Dealer, it has fulfilled its mission.

Lester L. Morse

December, 1923.

The Onion

Spanish—Cebolla, Italian—Cipollo, Portuguese—Cebola, French—Ognon, German—Zwiebel.

ONION (Allium Cepa, of the family Liliaceae). "**Allium**" is the ancient Latin name for Garlic but is the recognized family term for all species of onion, as: Onion, "Allium Cepa"; Chives, "Allium Schoenoprasum"; Leek, "Allium Porum"; these being the items best known to seedsmen.

Bailey's Encyclopedia, however, lists thirty-eight species of Allium, which indicates that the onion family has many relations.

The Onion is supposed to have originated somewhere in Central Asia in prehistoric times. It was well known to the Egyptians as a vegetable and was used extensively also by the Israelites both in Egypt and Palestine.

It is one of the most nutritious and wholesome of vegetables, in fact; it is sometimes called, "The King of Vegetables," and is one of the best foods to supplement a salt meat diet. Hence its popularity for mining and woodsmen's camps and seamen's mess. Its popularity is not confined, however, to humble stations, but it is becoming more and more a standard vegetable for all classes and is the chief factor in many appetizing recipes.

The onion is about ninety-five per cent water and five per cent solids. This accounts for its dependence on very wet soil for proper growth, or for an abundance of water where irrigation is required.

The importance of onions as a vegetable can be appreciated from the statistics as taken from "Weather Crops and Markets" as published by the U. S. Department of Agriculture. The average acreage for the three years of 1920, 1921 and 1922, give the entire U. S. 62,830 acres, with total average yield of 10,226,496 centals, of which California alone represented 10,293 acres with an average crop of 1,554,932 centals. From these figures it shows that California produces about one-sixth of all the onions produced in the U. S.

There are five different kinds of onions, all as different as if they did not belong to the same family except in flavor. They are the ordinary onion, such as we see in all markets; the Potato onion; the Egyptian or Tree Onion; the Welsh or Multiplier Onion, and Shallots. There are also onion sets, both the Red Top set and ordinary onion sets, but these are not distinct classifications—the latter being grown from market onion seed and the Top sets being practically the same as Egyptian or Tree onions.

The **Potato Onion** is a tuber and is planted in a furrow like a potato. It multiplies from this tuber the same as a dahlia or a potato. The tuber or bulb you plant grows to full size and the small attached bulblets want to be removed and replanted another season to get their full growth so that it takes two years to get an eatable sized onion from a Potato onion. There are three varieties of potato onion, one white, one yellow, and one copper yellow; the latter being the one commonly known. All look like a small sized ordinary onion. All are edible and seem to have the same flavor.

The **Egyptian or Tree Onion** is peculiar on account of its manner of multiplying. At maturity it sends up stalks which, instead of blossoming and seeding, produces little bulblets at the ends of the seed stalks where the seed pods are formed in ordinary onions, and these are usually called top onion sets. Together with these small sets are some small stems with seed pods which will mature ripe seed. About half of the head is composed of these seed pods and half are the sets. These bulblets are similar to onion sets and when harvested look and seem practically the same as the smaller-sized sets. They are usually red in color and, when set out, grow into a rather small-sized red bulb which is practically the

same as any other red onion in appearance and flavor. They are but little used in this country.

The **Red Top Set Onion** is very similar to the Egyptian or Tree Onion but it forms only the small bulbs or onion sets and no seed pods. These small sets are usually red or greenish red and very often both these and the Egyptian or Tree Onion Sets will begin to grow while on the head and will run up a considerable second stalk about 4 to 6 inches long, and these will again bear two or three small sets.

The **Welsh** or **Multiplier Onion** is used only in the green state as neck onions, and multiplies long green shoots from the root and does not form a bulb or a tuber. It also runs up seed stalks which blossom and form pods like ordinary onions but very often do not produce viable seed, and the common method of propagating is by dividing the root rather than by depending on seed. It is used very largely by the Japanese as a house garden vegetable and is frequently referred to as the Japanese Onion. It is more easily grown than neck onions or chives. There are two colors in general use, a yellow and a white. There is said to be a red variety but I have not seen it. It is perennial and will multiply every season if left in a spot of good ground.

Common Green Onions or Necks are simply an early variety of onion, usually a white variety which is sown thick and used when the tops are green and the bottom unformed. Any variety may be used for this purpose, but the early white varieties are best, since they form an eatable neck quicker and earlier in the season than other varieties.

Shallots. A species of onion produced in oblong clusters, and propagated by breaking off the individual bulblets and planting them like a potato. Each bulblet produces another cluster and they are used more for flavoring than eating onions, since the flavor is very strong. They come in two colors, coppery yellow and white.

Bunching Onions are the same as neck onions and are simply green onions, pulled when of required eating size. The seed of any early white variety will do for the purpose, but White Lisbon seems best.

Pickle Onions or Picklers are grown precisely the same as sets, but by using less seed per acre, say 25 to 40 lbs. The larger sets, or those over one inch in diameter, are frequently screened out of sets and used for pickles, but the large pickle factories use White Portugal seed and make a business of growing crops of pickle onions, sometimes using White Queen for an early white pickle.

Onion Sets are small undergrown or starved onions, made so by sowing from 60 to 75 lbs. of seed per acre instead of 4 to 6 lbs. which is sufficient in growing market onions. Onion Sets are now grown principally in the vicinity of Chicago on fine, heavily-fertilized soil, and the set growers have become the largest consumers of the flat varieties of onion seed. Onion Sets are used for setting out in the open ground for green neck onions, being set out in the winter in the South and in the early spring in the North. If left to grow, a large percentage of them will mature into full-sized market onions, these being rather earlier in maturing than those grown from seed.

The **Common Onion** in its several varieties is not only the type of onion in general use but is practically the only vegetable onion used in all parts of the World. Practically all onions of this class are produced from seed. Even those produced from sets are simply one year removed from seed. But the quickest, cheapest and most effective way to grow onions for market is to grow them direct from seed.

Growing Onion Bulbs in California

In California and the South, the seed is usually sown in November, December and January. Big crops and large onions require extra good soil and lots of water. The best onions and largest crops in California are grown on the muck soils and tule lands of the Delta Section. The soil there is a deep peat, mixed sometimes, and more or less, with river silt, and being below the surface of the rivers, the water conditions are easily controlled by either pumping out excess water or by irrigating when the soil gets dry. But any good soil will grow onions if given plenty of water during the growing season. Even soil of indifferent quality can be made fairly good onion land by applying sufficient fertilizer, principally phosphates and humus.

A very important thing in irrigating is to be sure that the crop is kept continually moist. If allowed to get too dry during the growing season and then watered the plants will begin a second growth and a large percentage of them will run to seed. Then, too, water never wants to be applied after the crop once begins to ripen down. In fact, after the tops begin to turn yellow, it is too late to cultivate or irrigate.

The seed is sown in rows with a drill, 14 inches apart, and if the land is rather weedy it is best to sow at least 5 lbs. to the acre, since in weeding the row a good many onion plants will naturally be destroyed. While weeds in the row must be removed by hand, the land between the rows can be easily cultivated with either a hand hoe or a push hoe. If sown early, in either November or early December, and the stand becomes injured up to possibly 50%, it is best to plow up the crop and re-sow.

The important thing is to keep the weeds out, and to keep them out when very young, since, if they once get to growing strong and choke the crop, the onion plants become weak and spindly and never recover from their injury.

Transplanting

In some localities where the land is very foul or where it is very wet until spring, onion plants may be transplanted. This is done by sowing the seed in beds in September or October, and later in March or April pulling these young plants and transplanting them in the fields in rows 12 to 14 inches apart. If this method is used, care must be taken to keep the small roots intact and the tops want to be cut off till the young seedling is from 5 to 6 inches long. Then plant them in a narrow furrow about 4 inches deep and 4 inches apart. In growing onions by this transplanting method, one gets even and regular shaped bulbs, but the method is expensive and rarely pays unless labor is plentiful and the market price above normal.

A good crop of market onions averages about 200 sacks or centals per acre. Crops of 700 sacks per acre have been grown on the tule islands, but these are unusual. In adobe or stiff clay soils an average of 150 sacks is more usual.

The cost is impossible to even estimate in these times, but, as there is much hand labor required, it is easy to see that growing onions for market is a pretty expensive proposition. The variety to be grown depends very much on the market one seeks. In California, Australian Brown is the leading market onion, principally on account of its keeping qualities. When properly grown, it is of medium size, very hard and has a thick skin, reddish brown and sometimes golden brown in color. The color is not so attractive, however, as the yellow varieties and either Yellow Danvers, Yellow Strasburg, or any of the Yellow Globe varieties are best for general appearance, and in cooking the flesh keeps clear and transparent. In

the southern part of the State, especially in the vicinity of Los Angeles, the market prefers Southport White Globe, which is very attractive in appearance and, while of fair keeping quality, is less desirable for keeping than the yellow varieties or the brown, and, in cooking, the flesh is sometimes greenish in color and frequently tough.

Red varieties, such as Southport Red Globe or Red Wethersfield, find little or no demand in California, but are very popular throughout the Middle West and South, and Red Wethersfield are very popular in the Province of Quebec.

For early market, there is grown about Stockton, California, for local markets, what we call the California Early Red. This was originally a Red Italian Tripoli and is a large, light red, half globe or apple-shaped onion. The seed for this onion is sown late in August or early September and the seedlings are transplanted in February. This usually brings ripe onions in May and June when prices are expected to be high. At this time also, Crystal White Wax and the Bermudas are in the market from Imperial Valley in Southern California and Texas, and Australian Browns or Brown Spanish are being received by importations from Australia, so that the market is quite often weaker than anticipated by the onion growers for early market. Another type of this light red California Early Red onion is a long, bottle-shaped variety which is used in the same manner.

Harvesting

Onions usually begin to ripen about August first. Ripening is detected by the appearance of the tops, which wither and fall over. Sometimes they continue to stand stiffly erect and, if still in this condition by September 1st, it is well to roll a light wooden roller over them to break them. In soft land the crop may be pulled by hand and laid in windrows, with the bulbs underneath and the dried tops well laid over as a cover for protection against the sun or early rains. If the soil is hard, a cultivator knife run under the bulbs and pulled by a horse is necessary to loosen the soil.

After being thoroughly dried or cured, the bulbs are sacked, but in the process of sacking the tops are either pulled or cut off and thrown first into a basket.

In growing for market, only bulbs that are at least two inches in diameter are sacked, and in handling onions it is important that they be not handled too often, since the outside skins are rather delicate and fall off to the detriment of the appearance as well as of the keeping quality of the onion.

Growing Onion Seed in California

It takes two full seasons to get a crop of onion seed. First the bulbs or onions must be grown. These are grown precisely the same as market onions.

The seed growers supply the seed from carefully-selected and pedigree stock and, where careful, they see to it that their representative is present, not only at the seed planting time but frequently throughout the season and especially at harvest time. These bulbs are usually grown at a fixed price, which is rather above what is anticipated for market prices. All varieties of onions will produce a few "off" or wrong colors and it is customary to have these thrown out and either destroyed or sacked separately and sold for market, but the growers are allowed full price for these. Each grower is usually given from 3 to 4 different varieties to grow, and as soon as pulled, cured, topped and sacked, they are ready for shipment, when the seed grower has them gathered up and transported to his several seed farms. Bulbs that have not fully ripened with the tops well dried off should always be thrown out.

If possible to do so, the seed grower likes to plant the onion bulb in the field early—usually in November. It is not always an easy matter to get his land prepared and ready to receive these onions, but every effort is made to do so.

When delivered on the field, they are placed in piles of some 15 to 20 sacks, each sack set on end, right side up, and the groups are placed about fifty steps apart or about as far as the contents of the sack will reach when planted. The land is furrowed with furrows three feet apart and about 4 to 5 inches deep. The sacks are frequently emptied by being carried on the shoulder and spilled in the row. Or, if done on a large scale, a wagon is provided and two rows spilled from the rear in an especially constructed frame. After spilling, laborers set the bulbs right side up and 4 or 5 inches apart in the row. A common guide is simply the width of the hand between bulbs. If set less than this, they are too thick and it is a waste of bulbs. Indeed, it is better to place them six inches, or even 8 inches apart than less than four. It not only allows plenty of sustenance for the bulb and air and light at the running up period, but allows room for hoeing during the weeding season. After the onions are set in the furrow they can remain uncovered for some time, but to my mind it is best to cover immediately, and with sufficient earth to just completely bury them out of sight. They will not begin to grow until it rains or at least until enough moisture develops, and the roots start first. Sometimes the root growth is tardy and the leaves start first, which is always a sign of a poor growth and a poor crop. In a normal season, the shoots or stalks do not show much before February 1st, but a fine root growth has been developing for a month or more.

During the Spring, the crop wants hoeing and cultivating and weeds must never be allowed to get the ascendancy, since, once choked, the onion is weakened beyond recovery.

As soon as the seed stalk begins to show above the leaves, which is about March 1st, in an ordinary season, all cultivation should be shallow, since the soil between the rows soon becomes literally full of small rootlets from the bulbs. Later, when the stalks are in bud, and then until cutting time, it is best to do no hoeing or cultivating except in cases of extreme necessity. The stalks are not only easily broken but scarred, and, if so, a stalk blight is likely to develop and the stalks fall down and perish.

The blossoming time of the onion varies in different localities. In the river sections they are in full bloom about the middle of June, but in Coast sections, such as San Juan or Watsonville, it is a month to six weeks later than this.

The stalks average about 3 feet high and each bulb usually bears from 4 to 8 stalks. As many as 24 to a bulb have frequently been counted. A characteristic of California onion seed crops is the prolific stooling of the bulb and is one of the chief differences between our climate and many other locations.

In the river section the pods are ripe and the first cutting begins about the 20th of July; of course, much later in the Coast sections. Two cuttings are the rule, and when the cutting begins only about twenty per cent of the heads are ripe enough to cut. Each head must be cut by hand with a sharp knife and should always be cut by catching the head in the palm of the hand and snipping off the stalk immediately under the hand between the third and fourth fingers. Only one head at a time should be cut unless they are very damp from dew or fog. When fully ripe, the seed shells very readily and it is not unusual to lose a good part of an onion seed crop by shelling, which may be caused by the wind or by carelessness in cutting.

Each workman is provided with a bag attached to his person and drops the heads into it as fast as cut. As soon as these bags are filled, he steps back to the

rear, where the foreman of the gang is ready with what we call a "working bag" or a large canvas bag, into which the heads are dumped. These working bags hold about 8 bushels and, when well shaken down and filled, are tied with a draw cord. Following behind the gang is a team which gathers up these filled working bags and takes them to the drying ground. This is a plot of ground not far from the seed farm buildings and has usually been devoted to some early crop which has been removed and the land cleared, smoothed off and rolled. Here are spread the sheets or large canvases or bean cloths 40 or 50 feet square. On these the heads are dumped out about four inches thick and left to dry for two or three weeks, being turned over every afternoon with a wooden rake. When thoroughly dry, they are ready for threshing.

In the river sections, threshing is all done by simply rolling the heads with a wooden roller drawn by two horses. This is possible on account of the very dry and warm condition of the atmosphere in that section. But in the coast sections a threshing machine is usually employed. This is a machine made locally and, so far as I know, is not an implement manufactured by any implement or machine factory. It is little more than a good set of corrugated cylinders, rigged into a good simple wind cleaning device.

All harvesting, threshing and preliminary cleaning is done out of doors, and, even if threshed by a machine, a good fanning in a fanning mill is necessary. The seed is then washed, or rather sunk in water and the chaff skimmed off. Then the water is run off over sieves into cloth-lined baskets and the seed taken and spread out in the sun to dry. It is spread out very thinly and after the first day stirred with a board or wooden rake or rubbed over by hand. The seed should never be washed on a damp day, or as late as sun-down on any day, since it is necessary that the seed be washed quickly and dried without delay. A safe rule is to never allow the seed to be in the water more than 30 minutes.

Although the seed appears to be perfectly clean after it is dried, there is always some light or shrivelled seed which refuses to float and it is absolutely necessary to again put the seed through a fanning mill, at least once, but usually twice, to get out all the inferior seed and put the crop into merchantable condition. This final cleaning is done in the seed house under ideal seed cleaning conditions and with the best up-to-date machinery. The seed is now put into double cotton seamless bags with a paper label on the top of the seed in the inside bag with the name of the variety and each bag securely sewed. Then a tag or stencil mark must be put on the outside bag. It is well to remember that all onion seed looks alike and its identity is absolutely lost unless the tags and labels follow it wherever it goes.

As fast as cleaned, samples are taken from each lot. One sample is marked "check" sample and is kept to be sown in the Trial Grounds to determine whether or not it has become "mixed" or wrongly labeled somewhere in the process of harvest. Another sample is sent immediately to the Seed Tester to test the percentage of germination. This percentage is found by sowing 100 seeds in soil in a greenhouse especially built for the purpose. The percentage of viable seeds depends very much on the kind of crop that the season has produced. The U. S. Dept. of Agriculture names 80% as a minimum percentage. In a good year, California onion seed will sometimes average 90%, but 80% is taken by the Seed Trade generally as a good acceptable basis of merchantable seed.

California grown Onion Seed is good for two years and will frequently grow very well the third year.

Low vitality in onion seed may be caused by several things. It may be that the crop has been hurt by blight or some other disease; it might have been too

dry and blossomed and ripened prematurely; it might have been sunburned by a scorching hot spell just as the seed was in the dough and shriveled badly; it might have been cut too green and the seed shriveled; it might have been piled too thick on the sheets either when in the head or after washing; and it may have been washed too slowly and not thoroughly dried before sacking.

The practically universal custom is to clear the land soon after the crop is harvested and prepare for another crop.

The onion bulb is practically all absorbed into the seed stalks and soon after the crop is cut the fields are cleared by either running a clod masher or steel rail over the land, or, if weeds have grown quite large, it is well to mow the whole piece with a mowing machine. If on rather dry land, the old bulb is practically dried up at the bottom of the stalk, but if on wet ground these bottoms are quite alive and will grow again. Sometimes they will grow quite luxuriantly and will send up stalks again which will blossom and seed, but the stand is usually thin and the crop not sufficient to warrant the use of the land and other expenses. The seed from these second-year stalks seems to be all right and the product quite as good as the first crop.

The onion contains a good deal of phosphorus and nitrogen and most of our California soils are benefited by the crop, so much so that, unless injured by disease, onion crops may be repeated almost indefinitely or may be followed with profit by almost any other crop.

It is almost impossible to state a figure that represents an average crop of seed. The heaviest crop I ever knew was 1500 lbs. per acre of Australian Brown and 1400 lbs. of Yellow Danvers Flat. Out of a total of several hundred acres of onion seed, there are always some pieces that are total failures and many that scarcely pay to cut. However, acre for acre and covering a period of many years, we figure that a fair average is 300 lbs. per acre for red varieties, 400 lbs. for yellow and brown and 200 lbs. for white. Costs and profits can be determined only by experience and conditions.

California Grown Onion Seed

Some varieties of European grown onion seed never do well in America and with us seldom make a true bulb, running largely to scallions or stiff necks. This is principally true of the standard British varieties, but is not true of the Early French, Italian and Bermuda varieties.

For some reason, which we do not understand, onion seed grown in our section of California does very well in all parts of the World. Onions grown from our California Seed elsewhere sometimes do not grow so large as they do here but they make a good saleable bulb and nearly always well ripened.

In going over Trial Grounds in various parts of Europe it is usually easy for me to pick out California samples, for they are nearly always evenly and well ripened and earlier than local grown seed.

There is no doubt about this point with California grown onion seed and it can be used quite safely for any location.

On account of our unusual climate and long dry harvesting season, we are a safer producing country than other places and have become quite the principal source of supply for the American varieties of onion seed wherever used all over the world.

Onion Diseases and Pests

The enemies of an onion crop, from its cradle to its grave, are too numerous to warrant more than a brief mention here. I once counted up all the pests, diseases and trials and tribulations that an onion crop was heir to, and found twenty-six of them. It sometimes seems as if the whole twenty-six attacked the crop in a single season.

There are two especially serious and destructive things that are dreaded by the Seed Grower every year. These are "mildew blight" and "sun-burn."

Mildew Blight

Mildew Blight (Perinosoporo Schlactii), will affect onion crops by attacking the leaves, and will injure the seed crop either in the leaves or in the stalk when running to seed. The attacks on the leaves are not usually fatal and, while the affected leaves will die, a new growth will come on. The disastrous effects are experienced in the stalks, which fall down and die soon after being attacked. The mildew is developed in warm moist weather and usually occurs late in the spring when such weather is most prevalent. If a bad attack occurs early only the first stalks are affected, but if the attack occurs late, as in May, practically all the stalks are injured and frequently the crop is lost. Sometimes, only spots of several acres each are affected and sometimes the injury seems to run in waves. There is no remedy for the disease and no method of culture to prevent it so far known. New land, old land, high land or low land are all affected if the weather conditions are just right.

Burn

"Sun-burn" affects the crop at blossoming time. The onion blossom is very sensitive and will not pollinate except under kindly conditions. When in full bloom, a cold wind or heat wave will hurt a varying percentage of blossoms and there is rarely a season in which large areas of seed onions are not affected. Usually the half of the head on the windward side is burned or blasted and only a portion of the blossoms will be followed by seed pods. There seems to be no remedy for these troubles and one is dependent on the season for his luck.

Another similar trouble is what some of us style "wind-burn." A period of severe cold winds during the blossoming period will also prevent proper pollination on the windward side of the head.

Other Blights

There are two other serious blights affecting the onion seed stalks, one being brought on by scarring the stalk. This is caused sometimes by the single-tree in cultivating. The scar makes a yellow spot which grows until it weakens the stalk and causes it to fall over.

Another blight affects the bulb near the root and the whole stalk falls over from the root. This usually happens just as the seed pods are forming and the seed, while it seems to ripen, is shriveled and worthless, as it will not germinate.

The above-mentioned are the principal pests that beset the seed grower in addition to his usual chances of drouth or flood, or hail or wind and various other weather troubles.

The market onion or bulb grower is beset by various insect and fungus troubles, chief of which are **Smut,** and **Mildew** and **Thrip,** and **Pink Root.** So far

as I know, there are as yet no effective remedies for either pink root or mildew except to change crops. Smut is more or less successfully combatted with formaldehyde and thrip is sometimes checked with sulphur or paris green.

Those who have made a study of soils and fertilizers claim that, where proper elements in the soil are wanting, they should be supplied to insure a vigorous, healthy growth, since insects and diseases usually attack a crop much more disastrously when it betrays a weak growth.

Although muck or tule soils are abundant in vegetable matter, humus and nitrogen, they are apt to be deficient in potash and phosphorus, and it is well to add these no matter how rich the soil seems to be.

Heavy clay and adobe soils need well-rotted manure or green manure plants, such as the various legumes, to secure humus and nitrogen. I wish to repeat again that an even and steady application of water to secure adequate moisture throughout the growing season is essential in California, where many crops are injured or lost during the long dry summers.

I recommend as a very good guide to the onion grower: Farmers Bulletin No. 1060, Bureau of Plant Industry, "Onion Diseases and Their Control," by J. C. Walker.

Onion Varieties

Following is a list, with descriptions, of most of the varieties of onions we have either grown for seed or grown from samples in our Trial Grounds. Although we can usually grow foreign onions well enough to describe their general character, shape, color and size, we are not able to definitely determine their merits, and we do not believe any one place can be found where this can be done with all varieties. We have consequently given full descriptions to American varieties only.

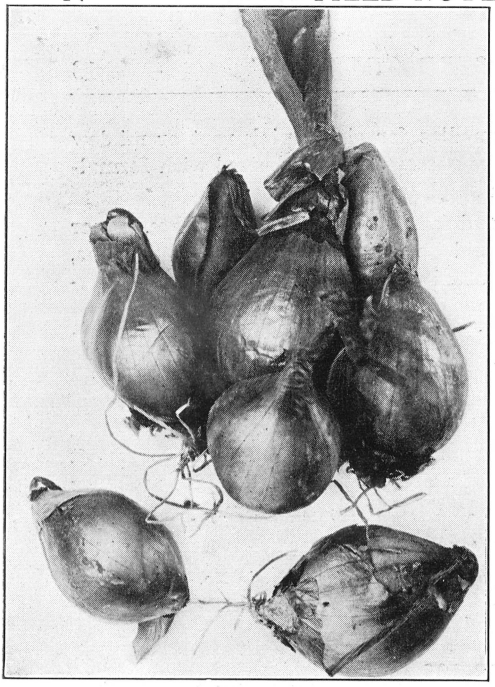
I have copied the descriptions of some of the foreign varieties from Nicholson's Encyclopedia where they seem to confirm my own notes.

What we consider the standard American varieties, regardless of differences and prefixes in names, and listed by practically all the American Seedsmen, are:

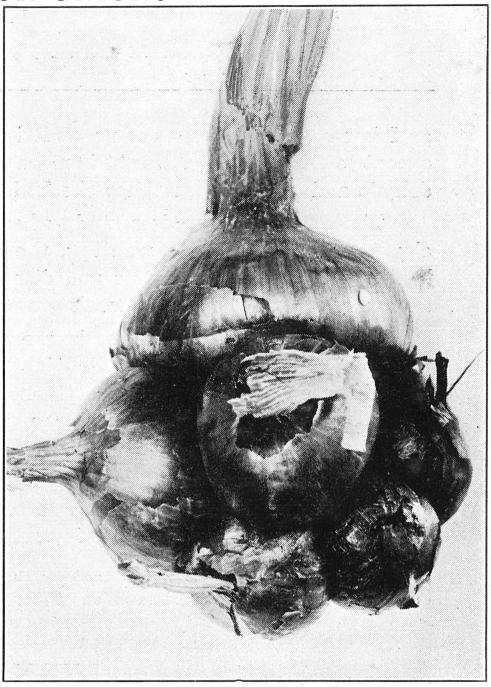
Australian Brown
Extra Early Red Flat
Ohio Yellow Globe
Prizetaker
Red Wethersfield
Southport Red Globe
Southport White Globe
Southport Yellow Globe
White Portugal
Yellow Danvers
Yellow Globe Danvers
Yellow Strasburg

All of the above except one appear in illustrations in the following seventeen pages. There are, of course, many other varieties listed by American Seedsmen and there are several different strains and selections of these varieties, some bearing very different and some only slightly different names.

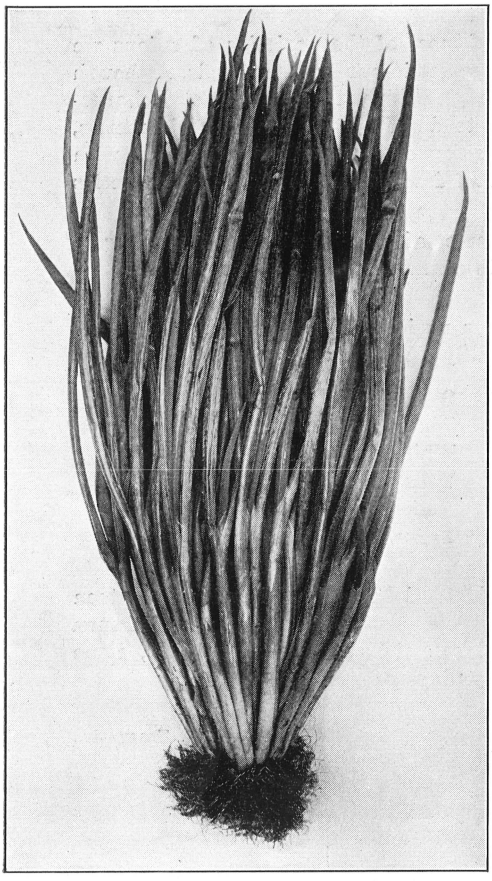
In "American Varieties of Vegetables for the Years 1901 and 1902" by W. W. Tracy, Jr., and issued by the U. S. Dept. of Agriculture, he tabulates about 400 names of onion varieties, all of which I think I have described in the following pages under their generally-recognized names. Included in this 400 there seem to be 109 which are represented in the above list of 12 standard American varieties.



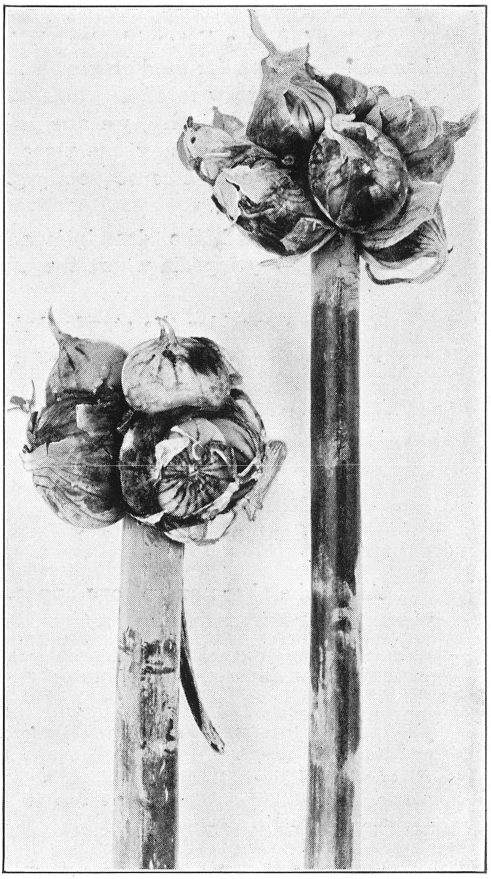
Red Shallots



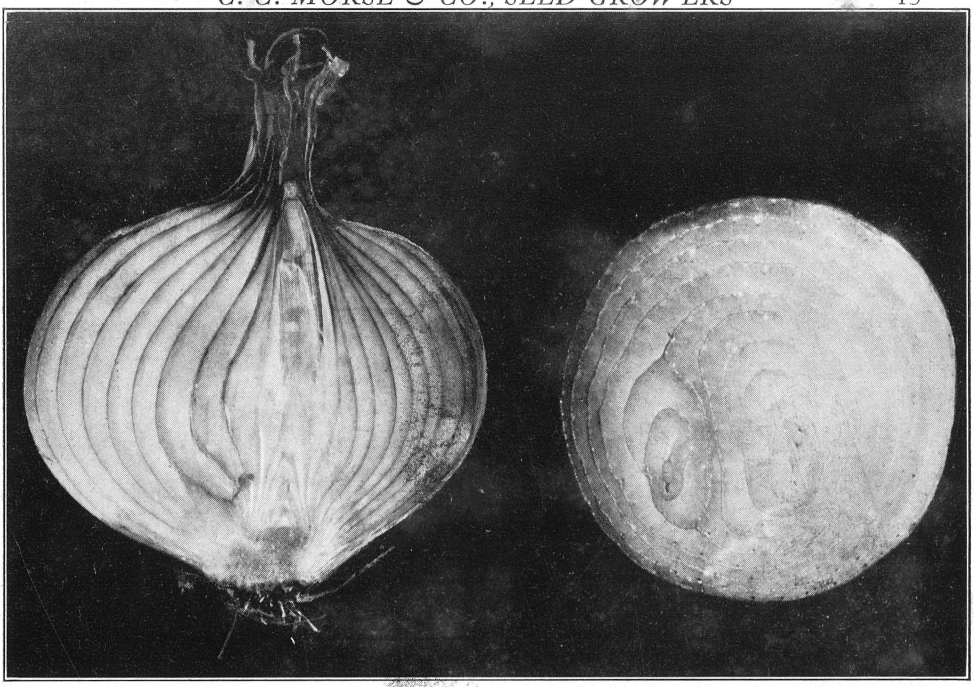
Potato Onions



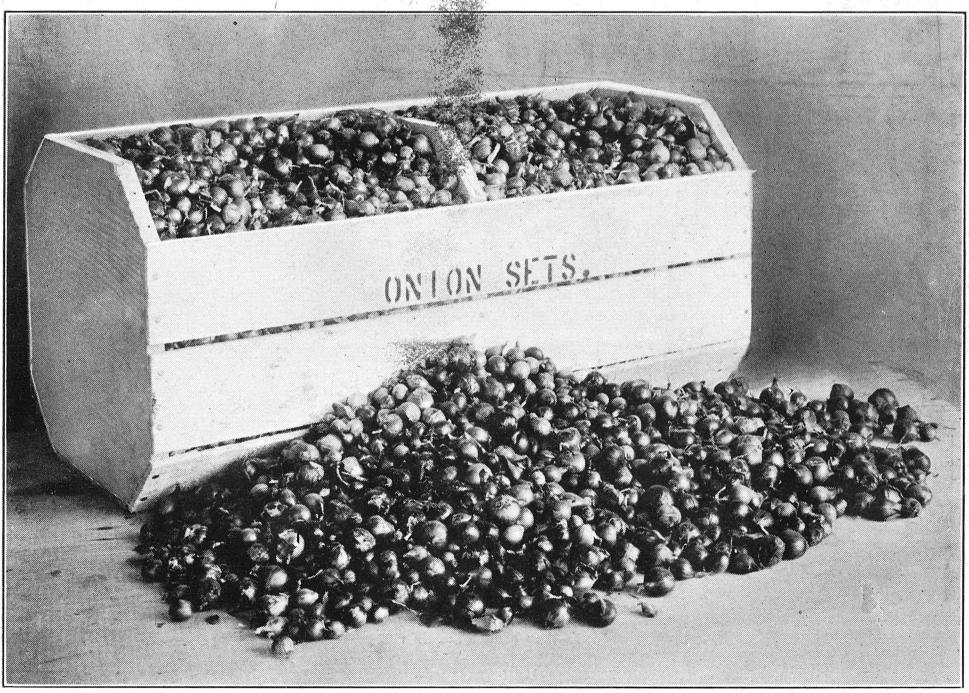
The Welsh or Multiplier Onion



Red Summer Top Sets



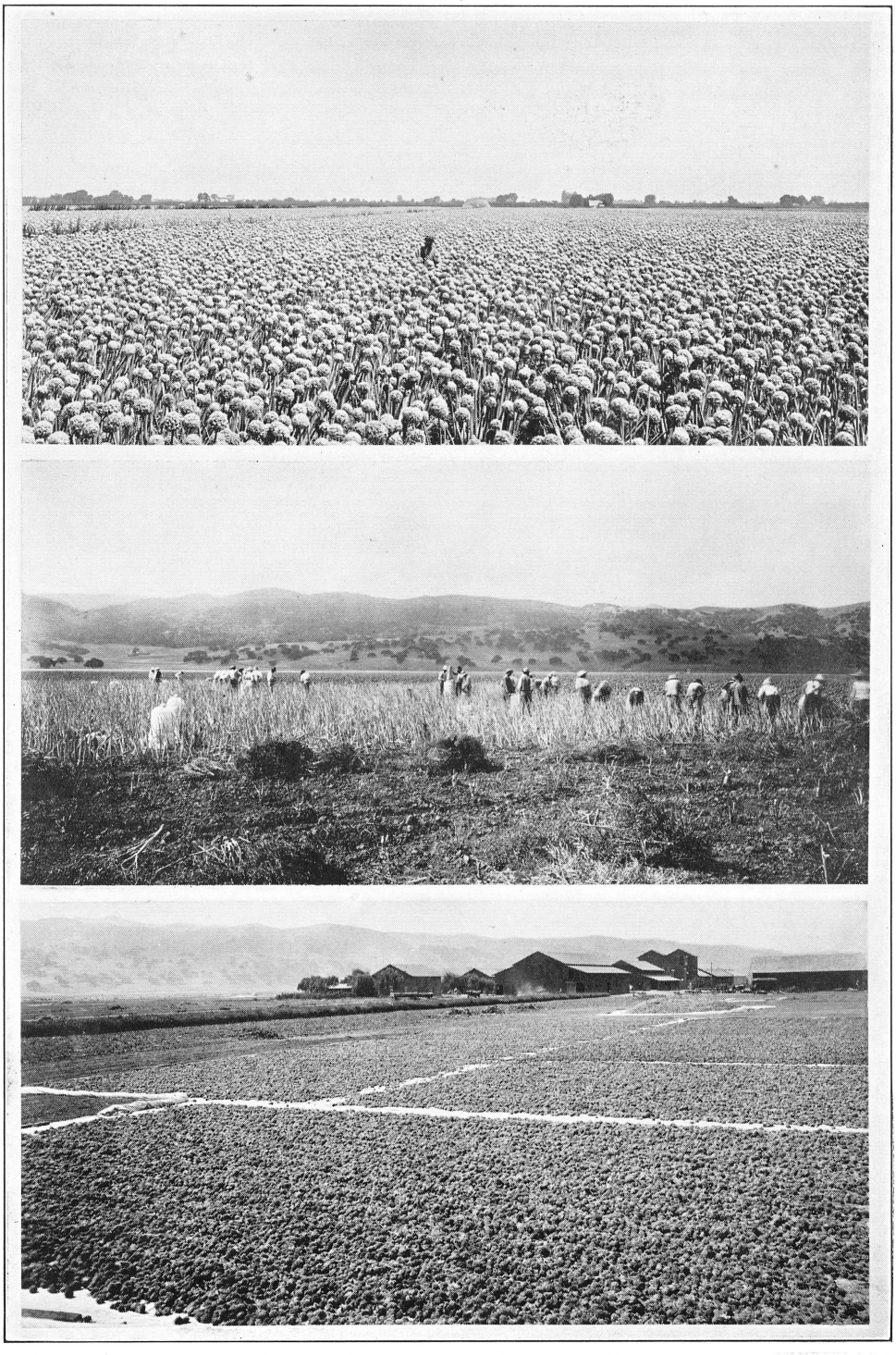
Cross Sections Showing Onion Layers and Stalk Bases



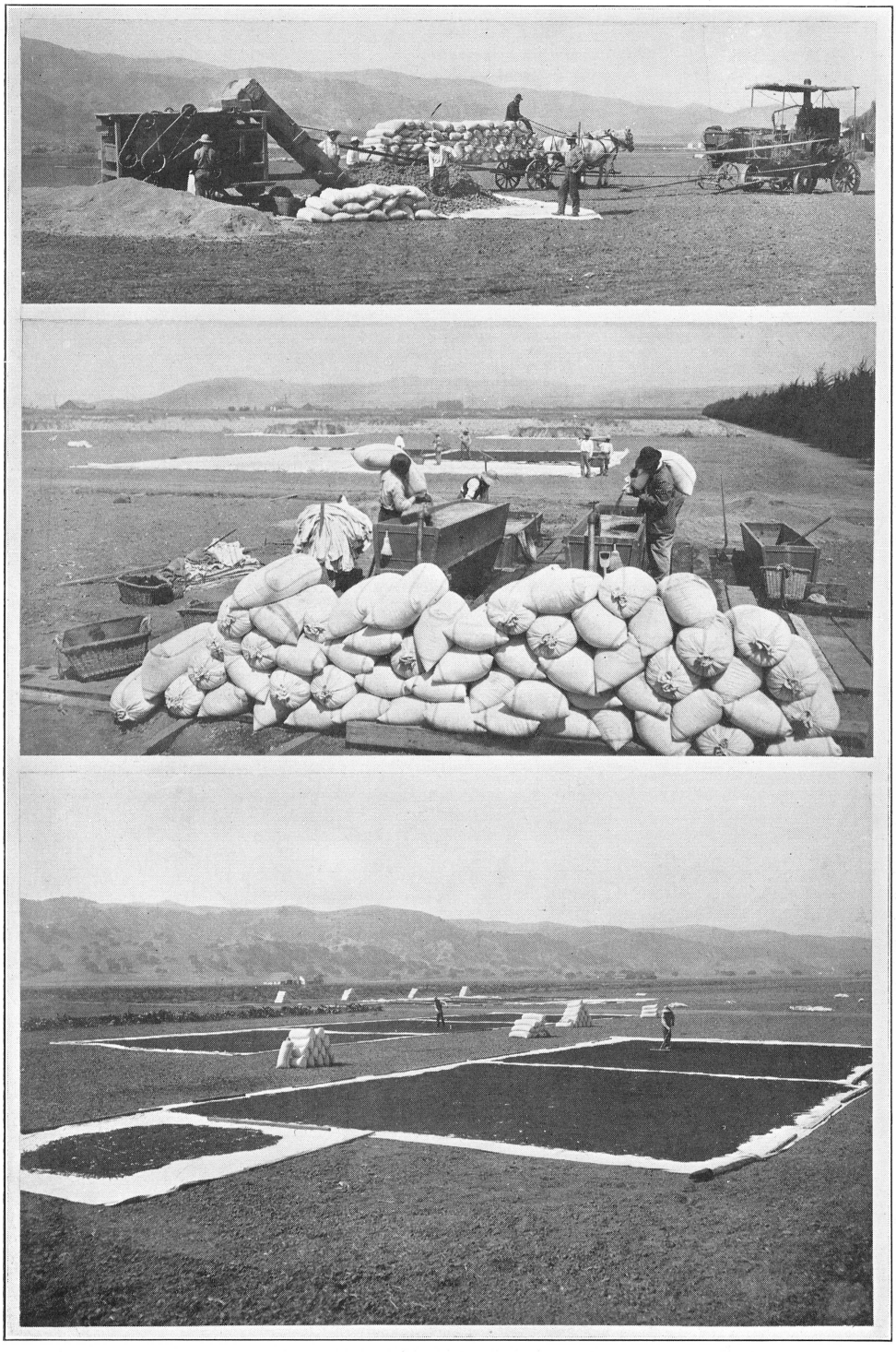
Onion Sets as Shipped in Crates



Onion Bulbs Just Pulled and Placed in Windrows
Onion Bulbs Sacked Where Grown and Ready for Delivery to the Seed Ranches
Spilling the Onion Bulbs and Setting for Seed in the Furrow



An Onion Seed Field in Bloom
Cutting Onion Heads at Harvest Time
Onion Heads Drying on Canvas Sheets



Threshing Onion Heads With Machine
"Washing" Onion Seed
Drying Onion Seed After "Washing"



Australian Brown



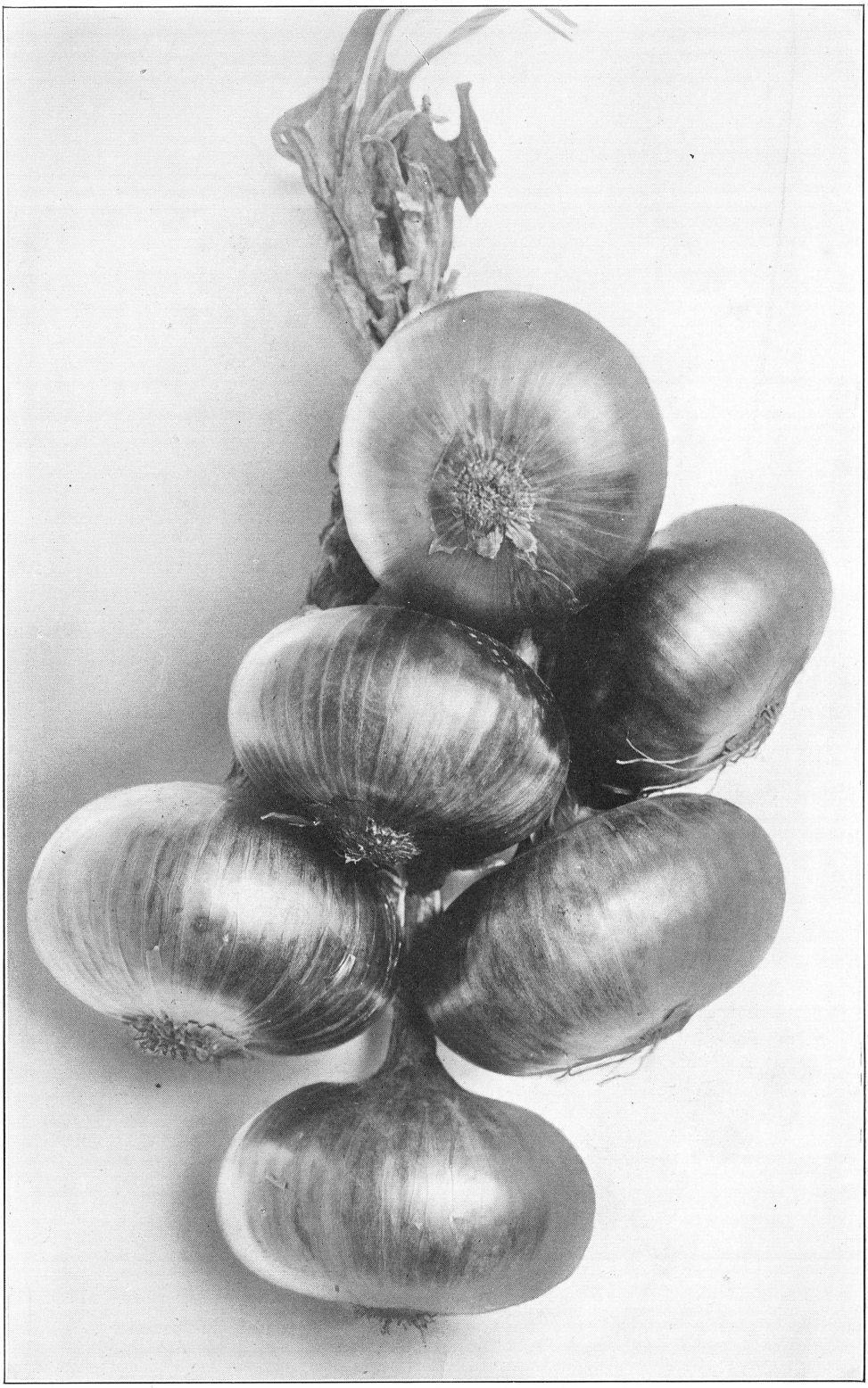
Extra Early Red Flat



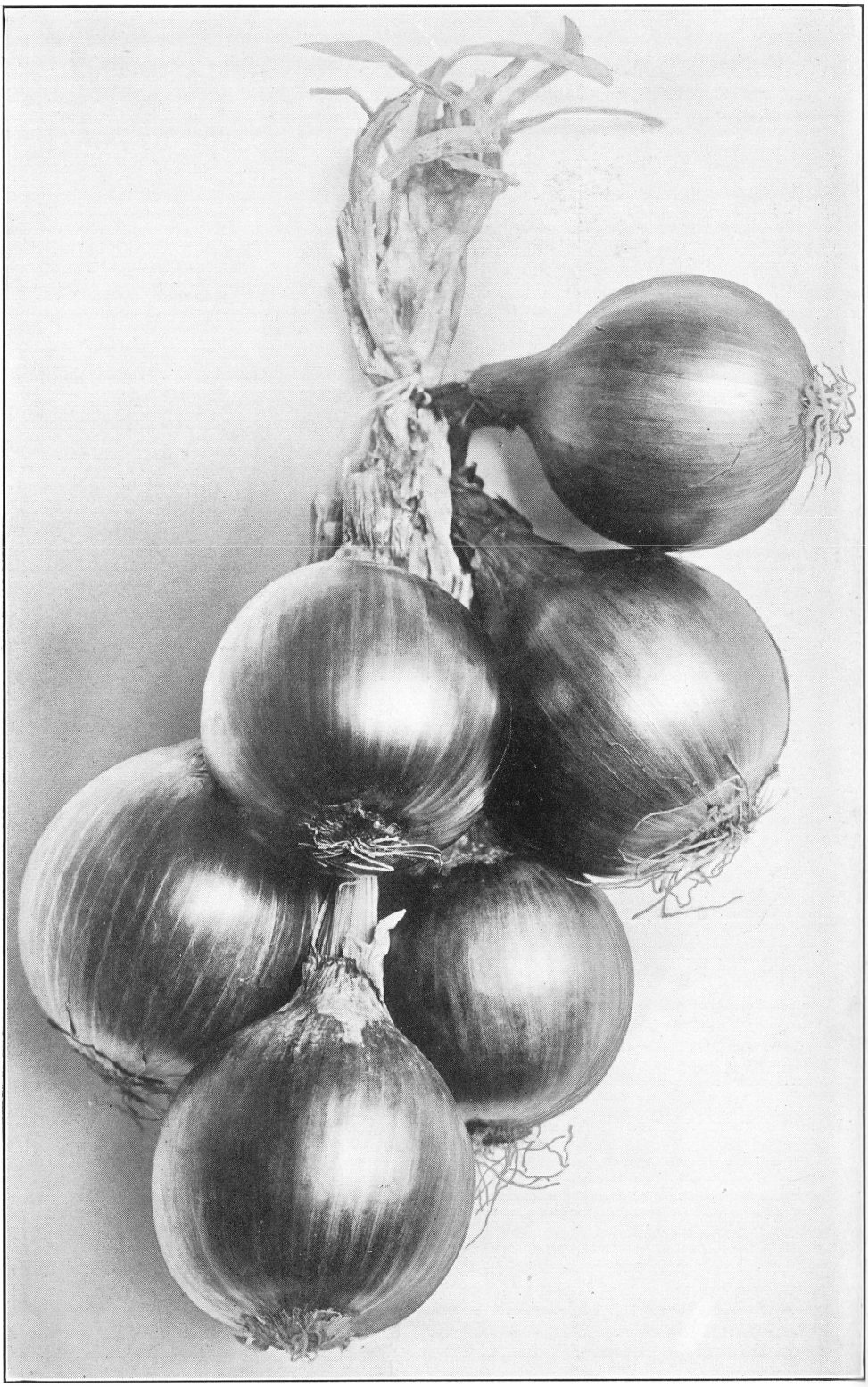
Ohio Yellow Globe



Prizetaker
(These samples represent the strain as too much apple shaped.
The true type is a perfect globe.)



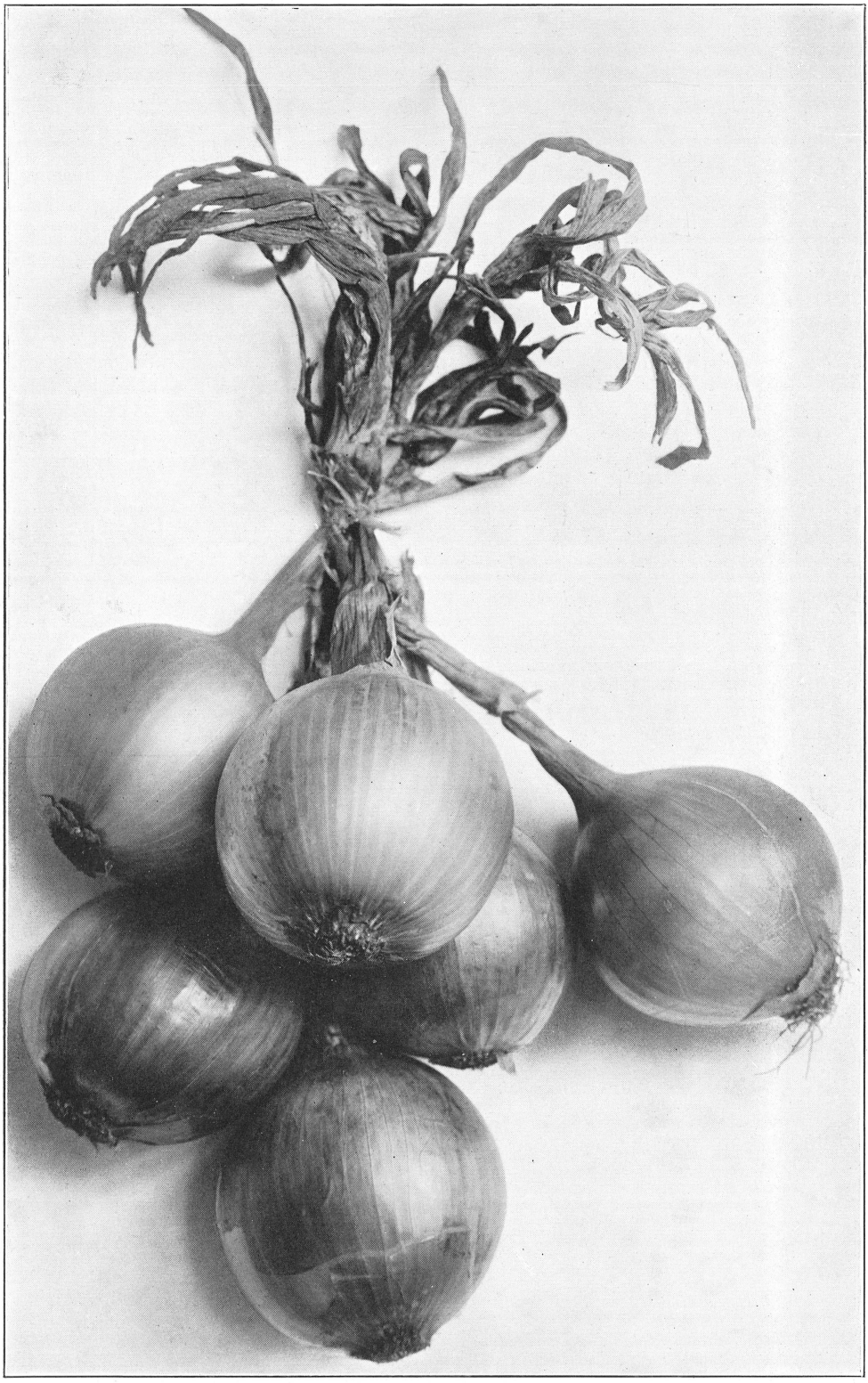
Red Wethersfield



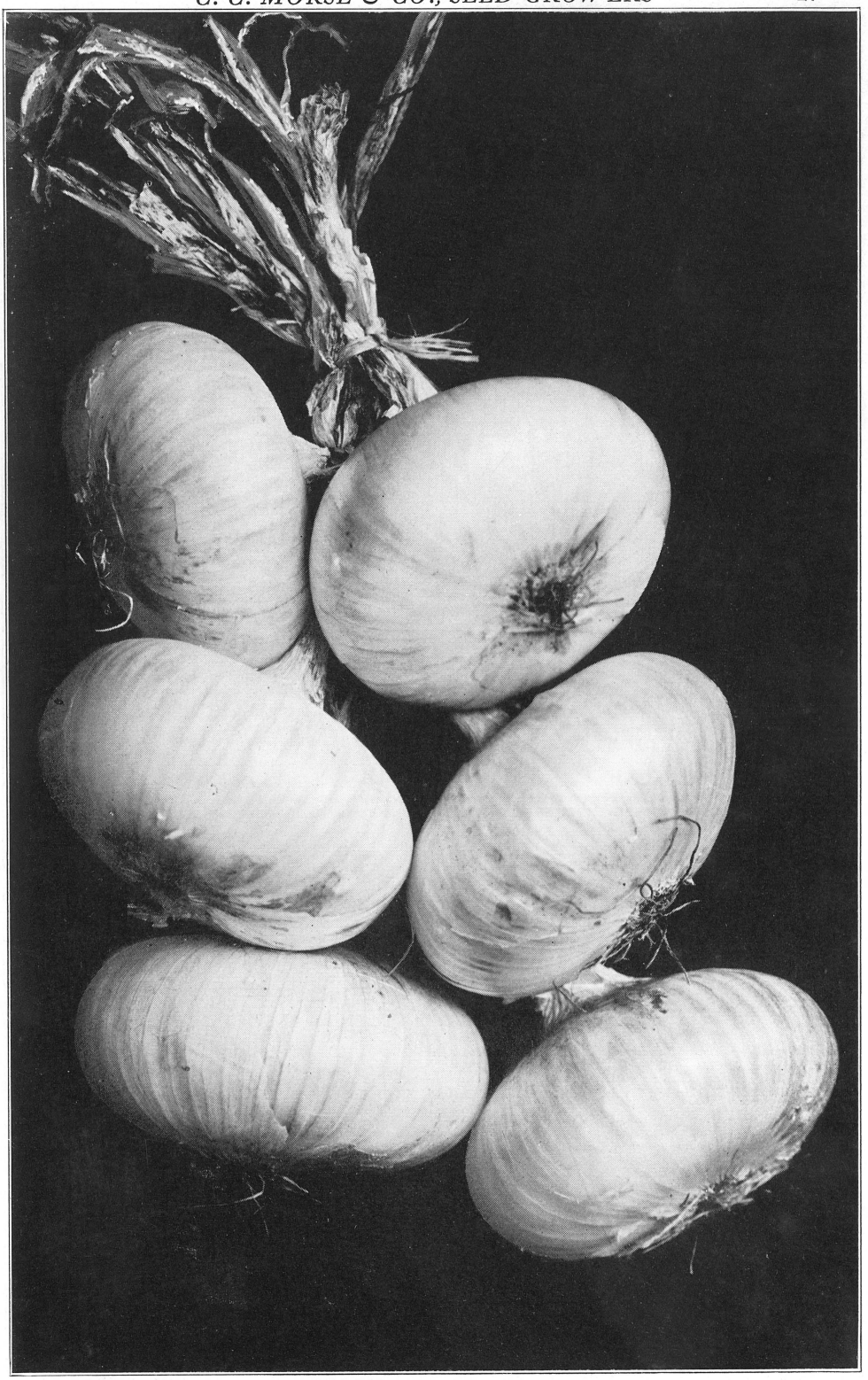
Southport Red Globe



Southport White Globe



Southport Yellow Globe



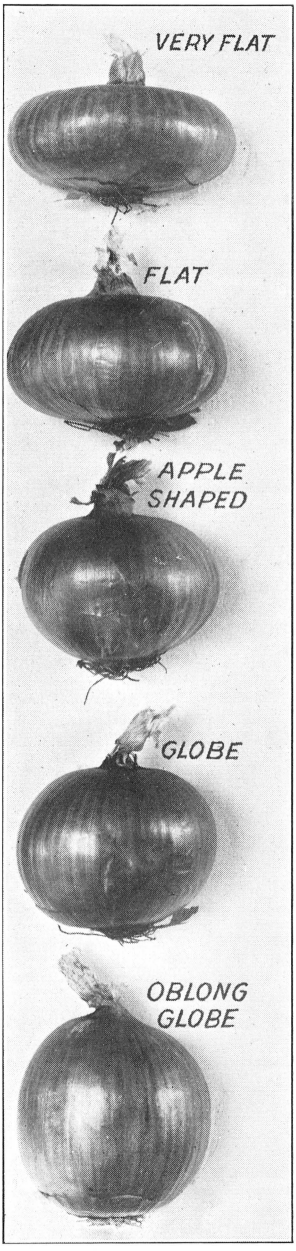
White Portugal



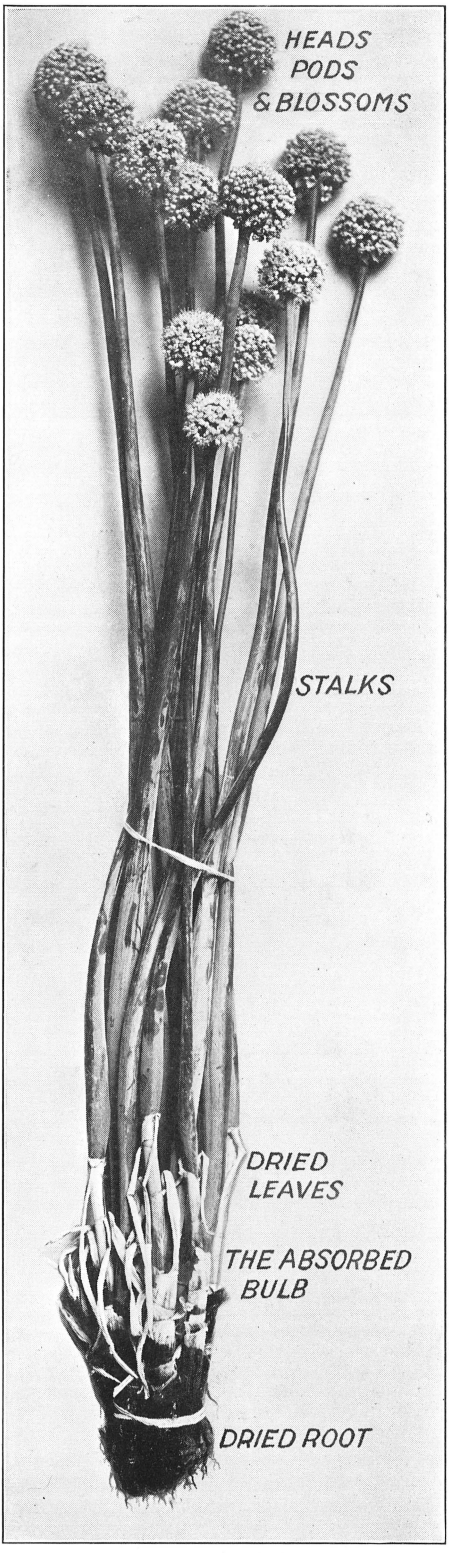
Yellow Danvers Flat



Yellow Dutch or Strasburg



Typical Shapes of Onions



An Onion After It Has Gone to Seed

Onion Varieties

In the following list—

Names in Black Caps and underlined are what we regard as standard American varieties.

Names in Black Caps are varieties confined practically to America.

Names in Black Face lower case are foreign varieties but used in America.

Names in Light Face caps are foreign varieties, hardly known in America.

Names in Light Face, lower case, are obsolete names and references.

Blank pages will be found in the back of the book for notes.

Adriatic Barletta. See Barletta (Extra Early Barletta).

Ailsa Craig. A variety listed by very few American firms but very popular in Great Britain, especially for exhibition purposes. The true variety is light yellow, large and oblong globe. It is one of the largest varieties and is fairly hard and keeps well. The best strains have a tendency to produce light pink bulbs, and frequently even mother bulbs will throw fully 50% of light pinks. It is claimed that in Great Britain this tendency to throw pinks is less pronounced than in California. It was introduced in 1887 by David Murray, gardener to the Marquis of Aisla. The island of Ailsa Craig is on the estate of the Marquis of Ailsa, and the island is solid rock and round in appearance. The Ailsa Craig onion is supposed to be the result of a cross between Danvers Yellow Globe and Cranston's Excelsior.

American Silverskin. See White Silverskin.

AUBERVILLIERS. Seem to be the same as Yellow Strasburg, possibly lighter yellow.

AUSTRALIAN BROWN. This is probably the most popular market variety in California and is generally grown for market on account of its keeping qualities, although it is not so attractive in appearance as any of the yellow varieties. The variety was introduced into America by C. C. Morse & Co., we having ordered from Arthur Yates & Co. of Sydney, N. S. W., through Cox Seed & Plant Co., five pounds of Brown Spanish seed in about 1894. The bulbs from this seed were set out in due time and the product of same sold to W. Atlee Burpee, who visited us the following summer. Mr. Burpee re-christened the variety Australian Brown and this name was generally adopted by all the American houses. For several seasons, Australian commission merchants had been sending these onions to our San Francisco markets and as the season there is the reverse from ours, these onions usually arrive in May when our markets are bare and good prices are usually obtained. They arrive, however, too late to be set out for seed. This made a good introduction for the variety and the new name was at once adopted by onion dealers.

Australian Brown or Brown Spanish is undoubtedly a cross and is decidedly a mongrel which makes it impossible to keep true. The true variety is a beautiful brown with a reddish base or rather reddish tinted flesh. Some bulbs, even with a brown skin, have a yellowish flesh but these usually become simply yellow onions when developed.

When first pulled, a crop of Australian Brown seems to be very badly mixed with reddish, yellowish, and brownish whites but after being exposed to the sun in curing, the red and yellow turn brown and become quite uniform in general appearance. All efforts to absolutely "fix" the variety have proved fruitless, except that selected

strains are superior to those not carefully or intelligently selected. A strain which goes by the name of the "Buckskin Strain" is one of these and the name seems to have been appropriated for any well-selected stock, the original Buckskin selection, however, was named by another California Grower.

The true type is medium sized and half-flat or a little more flattish than apple shaped. The skin is very thick and chestnut brown in color. The flavor is very strong and the flesh cooks rather dark. It makes an excellent set since it ripens well under any good ordinary conditions and keeps unusually well.

Australian Brown Globe, or **Brown Globe** or **Improved Brown Globe.** The description for this is the same as for Australian Brown, except for the shape of the bulb, since as the name implies, it is globular. In Australia it is simply called Brown Globe. We have grown it a number of years but it has never been popular here. For some reason it does not produce as big crops as the Australian Brown and is not a good set variety, for the same reason that no globe onion is as good for sets as either flat or flattish varieties. The Australian houses describe it as earlier than Brown Spanish and a good keeper. With us it is not appreciably earlier but is a very good keeper.

Australian Extra Early Yellow Globe, or **Australian Extra Early Golden Globe.** A dark yellow with coppery tint, rather oblong globe variety with a thick skin. It is early to mature and ripens down well under ordinary conditions. With us, it usually grows small, although large specimens are not uncommon. We attached the name Australian to it ourselves since the houses there simply list it as Extra Early Yellow Globe. The quality is good and it is a good keeper but it does not produce heavily and in spite of our efforts to develop it by selection it has never proved a good variety for our country.

BANBURY or IMPROVED BANBURY. A well-known and popular British variety but not listed and scarcely known in America. With us it is a trifle larger than medium in size. It is true globe shape and while the outer skin is greenish yellow it is pure yellow when the outer skin comes off.

Barletta, Adriatic Barletta, Barletta Pickling, or **White Barletta.** Properly known as **Extra Early Barletta.** A very early very flat pure white variety, frequently showing a blotch of light pink on the outer skin. Seed sown in January with us will produce ripe bulbs in June. The bulb is usually small and cooks very mild and sweet. Seed grown in California usually produces larger bulbs than the imported and also bulbs that ripen a little later.

It is not a profitable variety to grow for seed since the bulb will not keep and is hard to handle. Extra Early Pearl is practically the same thing and both are used for very early sets and pickles, and are listed by most American firms, practically all of the seed being imported. White Queen is also practically the same thing.

BEDFORDSHIRE CHAMPION. A very popular variety in Great Britain but not listed in America. Its nearest equivalent here is Southport Yellow Globe and we understand that in periods of shortage in Europe, our Southport Yellow Globe is frequently substituted for it. As grown in Great Britain, it is a fine large bright orange, globular-shaped variety of splendid keeping quality and fine flavor.

BLOOD RED. A variety listed by most of the European firms but by practically none in America. It is under medium size and a dark purplish red variety, with the purplish color invading the flesh to a degree that makes it cook dark and unattractive. In shape it is a little flatter than apple-shape. The red of the skin is much deeper and more purplish than any of our red varieties, although where well grown it looks like a dark strain of a trifle undersized Red Wethersfield. We sold some of our own growing once to a set grower in Chicago, who pronounced it a poor variety for sets, as it does not seem to be prolific.

Bolton, or Brownish Pink Bolton. A medium-sized, flat, coppery, pink variety, very hard and firm. It was a variety secured by F. H. Ebeling of Syracuse, N. Y., from an old market gardener who had grown the variety for years. We grew it for a time for L. A. Budlong of Chicago, who used it for sets but he finally abandoned it as he found Australian Brown superior. "Favorite Keeping Market," as listed by Vilmorin seems to be practically the same thing.

BOTTLE ONION. Bright pinkish yellow and very long; longer than "Pear Shape," and narrow; about 2 inches thick; color, light and rather faded in appearance. There is a light red type which see described under California Early Red.

Brown Globe. See Australian Brown Globe.

Brown Spanish. The original and probably the proper name for Australian Brown, which see for description.

Buckskin Strain of Australian Brown. A selected strain of Australian Brown, named by another California Seed Grower.

Bulb Bearing Onion. See Egyptian or Tree Onion.

CALIFORNIA EARLY RED. A variety grown largely in the vicinity of San Francisco, principally by the Italian market gardeners. They sow the seed during the first half of September and transplant in December and January to the open field. The bulbs are harvested early in May and sometimes in April, the tops usually being broken down and cut off without waiting for them to ripen down. A good large onion is secured and while not at all a keeping type, it makes a good solid onion, mild in flavor and excellent for an early summer vegetable. The true type is large, light red and globular. The skin is thin, the flesh rather coarse and soft. The variety was originally Red Italian Tripoli but is changed considerably by being grown here. When first imported, the Red Tripoli is smaller and later but is modified by change of environment. The name California Early Red has been adopted by the San Francisco seedsmen although the Italians simply call it Red Onion. There is also a selection of this same variety resembling the "Bottle Onion" in shape and size and which is called locally "The Italian Red."

Canary. We grew this in two types some years ago for H. H. Chester, the set grower of Chicago. One strain was flat and one was globe but both were a light yellow color, rather lighter yellow than any yellow onion I have ever seen. Mr. Chester later abandoned the stock as being of no great value and not better than existing standard set varieties.

COCOA NUT. An English variety. A yellow globe and seems to be similar to our Southport Yellow Globe.

COMMERCIAL, or Maule's Commercial. This is a selection of the darker-colored yellow and flatter as well as smaller type of Prizetaker. The selection was made and developed by Mr. Routzahn and named and introduced by Maule. It is an orange yellow variety and apple shaped, or about the color and shape and size of Yellow Globe Danvers. It resembles its parent in lack of keeping quality and has not become popular although introduced about 1904.

COVENT GARDEN PICKLING. Seems to be same as Queen.

CRANSTON'S EXCELSIOR. A well-known name in Great Britain and seems to be similar to Ailsa Craig.

CREOLE. A variety used largely about New Orleans but apparently nowhere else. As grown there it is a large, light coppery pink, mild and sweet and quite similar to a Red Bermuda. When grown by us it seems small and unattractive.

CRIMSON GLOBE. (V. A. & Co.) A rather soft globe and large; light red with yellowish tint. Seems to be an Italian variety.

CRYSTAL WHITE WAX, or **CRYSTAL WAX.** This is a Bermuda variety or rather the seed for it is grown in the Canary Islands and it is grown for market on a large scale in Texas and Imperial Valley, California, with the other Bermuda types, red and white. I am not familiar with its origin but think it a selection from one of the flat white Italian varities rather than a selection from the Bermudas. The true type is clear white, very flat, medium large and early. It begins to arrive in the markets late in April, being shipped in crates. It is not a keeping variety in any sense, but is early, mild and sweet. The skin is thin and the flesh white and waxy.

DAKOTA GLOBE. (O. H. Will & Co.) Seems to be a selection of Southport Yellow Globe. It is a good globe shape yellow of fair quality and ripens rather late, and would think the true strain should be grown in Dakota.

Danvers. See Yellow Danvers Flat and Yellow Globe Danvers.

Dark Red Italian. Seems to be a light pink flat soft Italian onion, showing ribs; very faded and soft—resembles Red Bermuda.

DENIA or **DENIA PRIZETAKER.** For full description see Prizetaker. The Denia is simply the original Prizetaker or Spanish King as shipped from the Spanish port of Denia. The strain when imported fresh, grows lighter-colored green foliage and produces a lighter yellow skin than after being acclimated here. Prizetaker as grown continually in California changed its character somewhat by getting to be a little too dark colored and small. We now use imported seed from Denia, Spain, every few years for renewing our stock and use it exclusively for Prizetaker. Onions grown the first year from imported seed produce leaves of quite a bright apple green. This shade of green changes to a deeper green the second year and to a still deeper shade the third, but the shade of green in all strains of Prizetaker is always different from other American varieties.

DEPTFORD. Described in Nicholson's Encyclopedia, as medium and flat with dark reddish-brown skin. A good keeping sort and early to ripen.

Early. The word "Early" when applied to Yellow Danvers, Red Wethersfield, Red Globe, Yellow Globe, Silverskin or Portugal, and Australian Brown, is a misnomer since none of these varieties are truly "early" and can only be had in early markets by using the transplanting system. These are all really "late" varieties. There are very definite varieties of "early" onions which are described in their proper order.

Early Neapolitan. Seems to be same as Maggiola.

Early Red Globe Danvers. See Gregory's Early Red Globe.

EARLY WHITE NAPLES. (Nicholson's Encyclopedia) An early form of Paris Silverskin, without keeping qualities, synonym of Early Nocera.

EBENEZER. The true type of this onion is a pure yellow flat variety, very firm and hard and an excellent set onion, and has been grown by gardners about Ebenezer, New York, for many years. It is presumed to be the same as Woodruff's Japanese onion, and I believe the description I have given for Japanese, is true of Ebenezer. The name, Ebenezer Onion, has been used for many years and has represented a variety of types from a globular light-colored onion, a flat yellow and a yellow bottle shaped, and a brownish amber apple shape.

El Paso. A local name given to White Italian Tripoli. As grown in Texas, it has changed its character somewhat and is larger and rather harder with better keeping qualities. The type is pure white, oblong globe, mild and sweet in flavor.

Egyptian or Bulbiferous Tree. See mention under "Onion Classification."

Excelsior. See Cranston's Excelsior.

Exhibition. A rather indefinite name used by several firms in Great Britain, most of which seem to be simply Ailsa Craig.

Extra Early Barletta, or White Barletta. See Barletta.

Extra Early Bloomsdale. See Pearl or Extra Early Pearl.

Extra Early Brown Spanish. A very early variety of medium size and is soft—not a keeper. The skin is brown but is very thin and peels badly when handled, especially so in sacking. The flesh is pink and cooks rather dark. It has some merit as an early market variety but although we have grown it for years it has never become popular. It seems to be used to some extent as an early market variety in Australia and a strain known as "Hunter River" Brown Spanish is very even and true.

Extra Early Golden Globe. See Australian Extra Early Yellow Globe.

EXTRA EARLY PEARL; EARLY WHITE PEARL; PEARL. Same as White Queen but as grown in this country by Landreth has varied somewhat in being a little larger and with better keeping qualities. Called "Pearl" by D. Landreth Seed Co. for many years.

EXTRA EARLY RED FLAT. (Early Red, Early Flat Red, etc.) An old and well-known American variety. It is purplish red but not so dark colored as Red Wethersfield. It is medium sized, very flat and early. With us in California it has an unfavorable characteristic in running to seed badly when being grown for market and should never be recommended for a market onion here. We attribute this to the fact that when deprived of sufficient moisture, especially in a dry season, it has a tendency to immediately begin to ripen, then with rain or irrigation it begins to grow again and if of sufficient size wants to run up a seed stalk. When well grown under favorable conditions, it is hard and firm and keeps well, but is not as good a set variety as Red Wethersfield, and should never be substituted for it. It also has a tendency to produce double onions, an undesirable characteristic.

FAVORITE KEEPING MARKET. (V. A. & Co.) A reddish yellow flat hard onion, and seems to be the same thing as Bolton.

Flat Danvers, or Flat Yellow Danvers. See Yellow Danvers Flat.

Garganus. See Giant Red Garganus.

GIANT RED GARGANUS. An Italian variety, a large bright red globe.

GIANT ROCCA BROWN. An Italian variety and listed by Burpee some years ago. A large globe-shaped reddish brown variety and a poor keeper.

GIANT ROCCA RED or GIANT ROCCA BLOOD RED, an Italian variety, large, globe-shaped and rather light red.

GIANT ROCCA, STRAW COLORED. An Italian variety, very light yellow, almost white, globe-shaped, and a poor keeper.

Giant Spanish or Gibraltar. See Gigantic Gibraltar. A large, light yellow, oblong globe variety of fair keeping quality but rather coarse in the flesh and mild and sweet.

GIANT ZITTAU. A large, light yellow globe-shaped variety.

Gibraltar. See Gigantic Gibraltar.

Gigantic Gibraltar. This is Vilmorin's Giant Spanish onion and was introduced by Burpee. Mr. Burpee claimed that the true type was to be grown only from French seed to distinguish it from Prizetaker. With us, it seems to be the same as Sweet Spanish, being a large coarse-grained, mild and sweet variety, light yellow with very small neck and apple green, glossy leaves.

Globe Wethersfield. Same as Gregory's Early Red Globe.

Globe Danvers. See Yellow Globe Danvers.

Golden Globe. See Australian Extra Early Golden Globe. The name is used by several seedsmen for any good yellow globe onion.

Gregory's Early Red Globe. Early Red Globe Danvers. Globe Wethersfield. A variety introduced some years ago by J. J. H. Gregory & Son, but it never became popular and is now seldom used. The type is rather under medium size, light red, apple-shaped and earlier than Southport Red Globe. It is a fair keeper, ripens down well and has hard, firm flesh.

Hardy White or Hardy White Winter. Seems to be same as Barletta.

Hunter River Brown Spanish. See Extra Early Brown Spanish. The Hunter River strain has usually been a very good one.

IDEAL YELLOW GLOBE. A dark yellow, medium size, oblong globe. Seems to be fairly early, hard, and a good keeper.

Italian. This is really the name of a classification, as all Italian varieties are sweet and of mild flavor and are not long keeping or shipping types.

Italian Barletta. See Barletta.

Italian Queen. See White Queen.

Irish Multipliers. Same as Potato Onions.

Japanese, (do not confuse with Multiplier or Welsh).

JAPANESE. A popular Eastern set variety named and introduced by F. H. Woodruff & Sons. The bulb is of medium size, pure deep yellow flat, very firm and hard. It ripens down well, and makes an excellent set of splendid keeping quality. Not only do the sets keep well, but when planted out they make an early mature onion for market. They are much more prolific than either Yellow Strasburg or Yellow Danvers and both seed and sets are in great demand. The keeping qualities are extraordinary.

It seems to be quite identical with a true stock of Ebenezer, but Mr. W. H. Woodruff states, that his original stock, "was found in the hands of an old gardener in New Hampshire, who had had it in his possession for many years." Mr. Woodruff also claims it is a deeper and brighter yellow than Ebenezer and not so flat.

It is not a profitable variety to grow for seed at any reasonable price since it produces only a few stalks and these seem delicate and succumb to any unfavorable weather. The bulb seems to throw what is called multiple centers, running up one or two stalks and some of them producing a large well-ripened bulb at the same time.

JAMES LONG KEEPING, or JAMES KEEPING (Nicholson's Encyclopedia.) Synonymous with Brown Globe.

Levant. As listed by Henderson some years ago seemed to be the same as Denia Prizetaker.

LISBON. A large globe with rather thick neck, pure white and early.

LOUISVILLE SET. A very flat hard variety of medium size and an excellent keeper, Of a pinkish yellow color. Is very popular in the vicinity of Louisville and makes an excellent set, but is not popular elsewhere and is seldom used away from its native home.

Louisiana. See Creole.

MAGGIOLA, or MARZAIOLA, or EXTRA EARLY MAGGIOLA, or more properly translated, The May Onion, so called from the fact that it is an early-ripening variety, ready for market in May. The type is pure white, flat, small with thin neck, small tops and very early in making a ripe bulb. It is quite similar to Barletta.

MAGNUM BONUM. (Nicholson's Encyclopedia.) A synonym of Brown Globe.

Mammoth Silver King, or **Silver King.** A popular Italian variety but while listed by most American firms is only used to a limited extent, and has never become a standard market onion. It is a medium-sized, pure white, very flat variety and rather early. In fact with us it is practically as early as Queen. It is supposed to be the same thing as Giant White Garganus. Like other Italian varities, the flesh is coarse and mild; when grown East it is said to run quite necky or rather does not ripen down well in wet weather. With continued growth here, it becomes larger and later.

MAMMOTH POMPEII. Same as Giant Red Garganus.

Mammoth Yellow Spanish. See Spanish King.

Mexican. See El Paso.

MICHIGAN YELLOW GLOBE. This name was given to a selection of Ohio Yellow Globe made under the direction of Dr. W. W. Tracy for D. M. Ferry & Co. some years ago. The bulbs were carefully selected for deep orange color, firm, solid keeping qualities and oblong globe with flat base at the bottom. True Ohio Yellow Globe, as we select it, is the same thing.

MOUNTAIN DANVERS. As secured from Long Seed Co., Boulder, Colo., this proved to be a very superior onion. In color it is pure deep amber. It is apple shape, larger than medium in size. The skin is thick, but not quite as much so as Australian Brown. The flesh is clear whitish lemon yellow and very fine and firm. The bulb is hard and heavy and a fine keeper. Other samples of Mountain Danvers from various sources have proved inferior to the above-mentioned stock and it is evident that this particular strain should be grown in Colorado to maintain its superior characteristics.

Multiplier. See pages 6 and 14, under The Welsh or Multiplier.

NAPLES GIANT ROCCA. (Nicholson's Encyclopedia.) Large, white, roundish and regular in outline; flesh white, thick and of good quality.

Neapolitan Maggiola White, see Maggiola.

New Queen. See The Queen.

NOCERA. (Nicholson's Encyclopedia.) Synonymous with Early White Naples. An early, poor keeping, small white variety.

OHIO YELLOW GLOBE. This is probably the type of yellow globe onion most widely used in America. Although selected to a slightly oblong globe at the upper half, with a flat portion at the bottom, it usually comes perfectly spherical or globular when grown for market on ordinary soils. It is selected for a pure deep yellow, and with hard and firm flesh and for good keeping quality. In selecting a trifle oblong bulb for stock seed, it has a tendency to flatten a trifle which insures a perfect globe. But it is necessary to be assured that the tops are small and well dried off since the oblong tendency, if not treated properly, might lead to a bottle-shaped onion with poor ripening quality, but in selecting to a flattish bottom the tendency to become bottle shaped is largely overcome. For a trifle earlier-ripening quality, Southport Yellow Globe is preferred. Michigan Yellow Globe is precisely the same thing as Ohio Yellow Globe, as we select it.

OREGON YELLOW DANVERS. A fine, hard, deep yellow variety, a little flatter than apple shape. An excellent keeper and of good shipping quality. The true characteristics are recognized only when it is grown in Oregon.

OXHORN. (V. A. & Co.) Same as Pear Shaped.

PARIS MARKET VERY EARLY (V. A. & Co.) Very early, almost as much so as Crystal Wax. Very flat, clear white and runs smaller in size than Barletta. Shows slight ribbing like Queen.

PARIS SILVERSKIN. (V. A. & Co.) Rather small, pure white and inclined to double. Only medium early and not so early as Queen or Barletta.

Pearl. See Extra Early Pearl.

PEAR SHAPED. (V. A. & Co.) The only type of this we have grown is a yellow bulb, long bottle shape, very narrow and a trifle thicker toward the base and running to a near point at the neck. Vilmorin in his "Vegetable Garden" mentions several varieties of Pear Shaped varying in earliness and in three colors, red, yellow and white. The only one we have grown was a long, thin, necky, yellow onion of poor quality.

PEAR SHAPED EARLY YELLOW. (V. A. & Co.) Light yellow, very oblong and about 3 inches thick.

Perennial Welsh. See Welsh or Multiplier.

Pineapple. (Johnson & Stokes). An oblong yellow globe, almost pear shaped and a fairly good keeper.

Potato Onions, or Underground Onions, or Irish Multipliers. The only one we have grown is coppery yellow and rather under medium size. It is propagated by breaking off bulblets which appear on the larger bulb and these are planted and grow to full size. Some dealers list a white and a yellow variety but we have never grown them.

PRIZETAKER, or **PRIZE TAKER,** or **YELLOW PRIZETAKER,** or **MAMMOTH PRIZETAKER.** One of the principal American Market varieties and grown on a very large scale in Texas. It is also grown to a less extent in many other sections, principally for its mild, sweet flavor and large size.

The true type is large, perfectly globular, yellow, but a lighter shade than Ohio or Southport Yellow Globe. The scales are thick and the flesh coarse and the skin is very thin and glossy. It is not a long-keeping variety as a rule, but when grown by the transplanting method will make a much harder bulb which keeps and ships well, especially in crates. It is usually a heavy cropper and averages nearly double the yield of the other standard varieties.

The history of Prizetaker is interesting. For many years quantities of large yellow onions had been grown and shipped to all parts of the world from Spain in crates. A consignment of these came to San Francisco during the early Fall of 1886 and were noticed by Mr. C. C. Morse who was so impressed by their fine appearance that he purchased the lot (about 50 crates), had them shipped to Santa Clara and planted them on his seed ranch there. The commission merchant did not know the name of them but thought they were called simply Spanish onions. Further and later inquiry proved them to be Spanish King and very well known throughout Europe.

Mr. Wm. Henry Maule visited our seed ranch the following summer and placed an order for the crop at $1.00 per lb. There proved to be 77 lbs. for him exclusive of stock seed and he introduced it in his catalog of 1888 as Prizetaker. He made a feature of it as a novelty and offered cash prizes for specimen bulbs for several seasons. The largest was one produced in Arroyo Grande, Cal. which weighed 5 lbs. and 1 oz. It is quite common to see them grow to 3 lbs. As grown continually in California it has a tendency to get smaller, darker-colored and flatter and we find it desirable to renew the stock occasionally with imported seed and we use what is called the "Denia" strain. In field growth Prizetaker is a dominant breeder and will stain other varieties at quite remote distances. It is especially troublesome to the yellow globe varieties as it creates a lighter color of yellow in these strains.

POMPEII EARLY WHITE. Seems to be the same as Barletta, very small thin neck and tops.

Queen. See White Queen or The Queen.

Red Bermuda. A well-known standard variety, but the name is rather misleading since the color is not a definite red but rather a light yellowish pink. When properly grown, the variety is of medium size, flat, with coarse, mild, sweet flesh. The skin is very thin and rubs off easily. Like all Bermuda onions, it is very early and is not a keeper.

Red Cracker. A very early light red variety and under medium size. Not a good keeper but very early and flat.

Red Flat Genoa. Same as Red Italian Tripoli.

Red Flat Italian. See Red Italian Tripoli.

Red Italian Neapolitan. See Red Italian Tripoli.

Red Italian Tripoli. A popular and standard Italian variety. It is large and globe shape, with light red or deep pink skin. The flesh is coarse and mild and the variety does not keep well. It is only medium early but can be grown for early market by sowing the seed in August or September, and transplanting. After being acclimated in California, its shape flattens somewhat and it becomes earlier, and a well-acclimated strain is what we call, "California Early Red."

Red Globe. See Southport Red Globe.

Red Victoria. See Victoria Red.

RED WETHERSFIELD. One of the best known standard American varieties, which was originally grown largely in the Connecticut Valley and received its name from Wethersfield, Conn. The true type is medium size, flat and is slightly sloping on top but true flat on the bottom. The skin is dark purplish-red when the bulb is first pulled but in our bright sun, soon turns lighter if exposed. The layers are reddish where they touch and the flesh is slightly flushed with pink. The flesh is fine-grained and firm and the variety is classed as late ripening and one of the best keepers. It makes an excellent set and is used almost exclusively for red sets. The market for red onions is the Middle West and South, and Quebec, but they are almost unsalable in California, excepting California Early Red which ripens in May and June.

Rocca. See GIANT ROCCA, Brown; Blood Red; Straw-colored.

ROUSHAM PARK HERO. Seems to be quite similar to our Yellow Danvers Flat.

Round Yellow Danvers. See Yellow Danvers Flat.

Silver King, or Giant Silver King. See Mammoth Silver King.

Silverskin. A name used some years ago in the markets of San Francisco to designate a Yellow Danvers Onion, and some of the old-time commission men still persistently refer to all Yellow Onions as Silverskin.

Silverskin. See White Silverskin.

SILVER VERY LARGE FLAT. (V. A. & Co.) Seems to be very much like our White Portugal.

Small White Extra Early Barletta. See Barletta.

Southport. The name "Southport," although adopted first in Connecticut, seems now to have been accepted by almost unanimous consent in America for the three perfect globes of yellow, white and red varities. The use of this name seems to prevent confusion with other varities of globes of these colors. Following is a description of each.

SOUTHPORT RED GLOBE. One of the standard American onions and used in large quantities in some markets. The true type is of medium size, globular and with a tendency to be oblong, very deep purplish red, even darker than Red Wethersfield and without as much of the purple shade in the color The skin is medium thick and the layers are whitish with only a suggestion of pink tint. The flesh is fine grained, firm and the flavor strong. The variety is late ripening and is an excellent keeper.

SOUTHPORT WHITE GLOBE. One of the standard American Market onions. The true type is a little under medium size, perfectly globular and pure white. The skin is rather thin, the flesh waxy white, fine-grained but rather strong. It is late ripening and a fair keeper, perhaps the best of the white varieties but not so long-keeping as the yellow or even the red. While it makes a handsome appearance as a market onion, it has a tendency to cook greenish and is not as clear and transparent when cooked as the yellow.

SOUTHPORT YELLOW GLOBE. One of the standard American market varieties but is not used in as large quantities as either the Ohio Yellow Globe or Yellow Globe Danvers. The true type is medium size, globular with tendency to apple shape. The color is deep yellow or nearly orange. The flesh is lemon yellow, fine-grained and fairly strong. It is late-ripening and an excellent keeper.

While it is a remarkably handsome market variety, it is rather over-bred and is not as vigorous a cropper nor as good a seeder as the other above-mentioned yellow globes. It is a little earlier than Ohio Yellow Globe but not quite so early as Yellow Globe Danvers, and all three of these yellow globes are later than Yellow Danvers Flat and Yellow Strasburg.

Spanish King. Same as Prizetaker.

Spindle Shaped. Same as Pear Shaped.

ST. MARIE ROSE COLOR (V. A. & Co.) A light red flattish, medium-sized hard onion; as light in color as California Early Red but hard.

Strasburg. See Yellow Strasburg.

St. Thomas Blood Red. See Blood Red.

SWEET SPANISH. In color of leaves and in the general appearance of the bulb this is very similar to Spanish King and Prizetaker. It has, however, a smaller neck, ripens down evenly and in some localities is earlier. It seems to be the same thing as V. A. & Co's. Giant Spanish or Gigantic Gibraltar.

Teneriffe. A port in the Canary Islands from which most of the Bermuda onion seed is shipped. With very little exception, all of the Bermuda onion seed used in the world now comes from Teneriffe, Canary Islands.

The Queen. See White Queen.

TREBONS. A variety used in Great Britian but seldom listed in America. It is a large oblong variety with yellowish green skin. The color is quite a green shade and unattractive. The flesh is coarse and the flavor mild. It is late in ripening and is not a keeper. We grew it several seasons and tried to introduce it here, but without success.

Tripoli. This is the name of a class or type, under which are listed

Globe Tripoli
Globe Tripoli
Flat Red or Red Flat Tripoli
Early White Italian Tripoli
Large White Flat Italian Tripoli
Large White Flat Italian
Mammoth or Giant White Italian Tripoli
Mammoth Deep Red Flat Tripoli

The same class or type also includes

Giant Rocca, several colors
Bassano
Genoa
Garganus, red and white

TWO-BLADED ONION. (Nicholson's Encyclopedia.) The true two-leaved type has small, roundish bulbs of a dull, yellowish-brown color. They are about one inch in diameter, firm, ripen early and keep well. Much grown for pickling on account of its small size.

Up-To-Date. A dark yellow, apple-shaped onion of good keeping quality.

VESUVIUS. A French variety which seems to be the same as Yellow Strasburg.

VAUGIRARD. Seems to be same as White Italian Tripoli.

Victoria Red. A variety listed for some years by Burpee and seemed to be practically the same as Red Italian Tripoli, but originally it was oblong globe or nearly pear shaped

Victoria White. A variety listed for some years by Burpee and seemed to be a large, oblong globe type of White Italian Tripoli, in fact some specimens were almost pear shaped.

Wildpret's Golden. A bright yellow Bermuda onion, early, flat and medium small, and same in quality as other Bermudas. It turns green with us as soon as pulled and exposed to the sun.

White Bermuda. This is not, as the name implies, a pure white onion but is a light straw color with a suggestion of pink tint. In size, shape and quality it is the same as the Red Bermuda, being medium size, flat, very early and in no sense a keeper. The skin is very thin and rubs off readily. The layers are slightly tinted straw but nearly white and the flesh is coarse; very mild and sweet. It is grown in large quantities in Southern Texas and Imperial Valley, California and most of the seed is imported from Teneriffe, Canary Islands.

White Bunching. The seed of any white onion is used for this although the early white varieties are preferred and White Lisbon gives the best results. The green onions are pulled when about the size of a lead pencil or a little larger and tied in bunches and sold for eating green. "White Multiplier" also makes a good "bunching" onion.

White Globe. See Southport White Globe.

White Lisbon. See Lisbon.

White Italian Tripoli. Large, clear white but not as flat as Silver King—runs to a point at bottom. With us is rather early, fully as early as Silver King. White Tripoli, with us, does not ripen down uniformly as Queen, and when grown East it runs very necky in wet seasons.

White Multiplier. A Perennial type of onion, like the Welsh. It is propagated by breaking off the branches and setting them out. A few planted in a bed will spread and afford a good supply of green shoots for green onions or bunches.

WHITE PORTUGAL. This is one of the standard American onions and the pure white variety most largely used. The true type is of medium size, flat, pure white and the flesh is fine-grained, firm and hard. It is late ripening and a good keeper. It is used exclusively among the large set growers about Chicago for sets and by most of the pickle growers for pickles. It is now used almost exclusively for White Silverskin, although the original true strain of this latter variety was earlier, flatter and not as firm nor so good a keeper.

White Prizewinner. Quite like Southport White Globe but more apple-shaped.

White Queen. An Italian variety and used quite generally both in this country as well as Europe for a very early market onion, but it is not used in large quantities here. The true type is under medium size, pure white, flat and with rather distinct ribs. With us, it frequently grows large—fully as large as Silver King and very flat. It is very early although not so early as Bermuda or Crystal Wax, the flesh is coarse and the flavor mild and sweet. It is not a keeping variety and while used for early pickles is not recommended since White Portugal is preferred on account of its keeping qualities. Is very similar to Barletta.

WHITE SILVERSKIN. As just stated, White Portugal is now substituted almost exclusively for this. Some years ago White Silverskin was the white variety grown for sets and pickles in Bucks Co., Penn., and the variety was flatter, a little earlier but not quite so good a keeper as White Portugal. On account of its inferior keeping qualities, it was dropped and while the name lives, the variety itself is practically lost.

WHITE SPANISH. Nicholson's Encyclopedia gives the following as forms of White Spanish: Anglo-White Spanish, Banbury, Nuneham Park, Reading and Rousham Park Hero.

WHITE SPANISH or STRAW COLOR. (V. A. & Co.) Seems to be the same thing as our Yellow Danvers Flat.

WHITE SPANISH or PORTUGAL. Seems to be the same as our Yellow Danvers Flat.

White Victoria. See Victoria White.

Yellow Cracker. An excellent set variety but difficult to keep true, but little used since it does not seem to be prolific. The true type is exceedingly flat, in fact the flattest and thinnest of all onions. It is a little under medium size, pure yellow and a little lighter in color than Yellow Danvers Flat. It is fairly early and ripens down readily. It keeps well but is not profitable since during the time we grew it, it never produced a good crop of seed. We used to get a fine strain of it from Leonard Seed Co., but Mr. Leonard advised me he had lost the old original strain.

YELLOW DANVERS, or **YELLOW DANVERS FLAT.** Until recently the name Yellow Danvers was used to distinguish the variety from Yellow Globe Danvers, but in an effort to be more definite in trading with the set growers, the word Flat has been added as a fixture. The true variety is medium large and a little thicker than "very flat." The color is clear bright yellow and the flesh is white, suffused with a tint of lemon yellow. The skin is medium thin and clings well. The variety is one of the hardiest, most easily grown, and will ripen down and make an edible hard, good-keeping onion in nearly all parts of the world under fair conditions. The flesh is fine-grained, firm and hard and the variety is one of the best keepers. If the world could have but one variety, it should choose Yellow Danvers Flat of California grown seed.

Mr. Burpee used the name Round Yellow Danvers to distinguish this variety but the name has not been generally adopted.

YELLOW DUTCH, or **YELLOW STRASBURG,** or **STRASBURG.** This is a popular variety in America and used principally for growing sets. The true variety is pure yellow, flat, late ripening a little under medium size and the flesh is fine grained, firm and hard. It is a splendid keeper. It is very similar to Yellow Danvers Flat and really differs from it only in being flatter and in the color of the skin in which Yellow Dutch is lighter yellow and at the top and bottom shows a faint suggestion of pink—also the dried neck is almost pure white. Yellow Dutch or Strasburg originated in Bucks Co., Penn., where it was bred especially for a set onion.

The Chicago set growers generally find little to recommend it over Yellow Danvers Flat except that it ripens down more uniformly, sometimes even under unfavorable conditions.

Yellow Egg. Seems to be practically Yellow Globe Danvers.

Yellow Globe. See Southport Yellow Globe, Ohio Yellow Globe, Michigan Yellow Globe, and Yellow Globe Danvers.

YELLOW GLOBE DANVERS. The most generally used name in America for a yellow globe onion. A true strain is perfectly globular, rather earlier than Southport and Ohio Yellow Globe, of medium size and pure yellow. The true strain originated in Massachusetts.

YELLOW MOISSEL. (V. A. & Co.) A very light yellow, large, flat, soft onion. Like a flat Prizetaker—as flat as Yellow Danvers Flat.

Yellow Strasburg. See Yellow Dutch.

MEMORANDA

MEMORANDA

MEMORANDA

MEMORANDA

MEMORANDA

MEMORANDA

SUNSET PRESS, SAN FRANCISCO